

Appl. No.: 10/668,436

PATENT

Amdt. dated: June 1, 2006

Reply to Office Action of: February 9, 2006

Amendments to the Drawings:

The attached sheets of drawings includes changes to Figs. 2 and 3. These sheets, which include Figs. 2 and 3, replace the original sheets including Figs. 2 and 3.

Attachment: Replacement Sheets
Annotated Sheets Showing Changes

REMARKS/ARGUMENTS

Claims 1-23 are pending. Claims 1, 13, and 21 have been amended. No new matter has been introduced. Applicant believes the claims comply with 35 U.S.C. § 112.

Claims 1-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art (APA). The Examiner recognizes that the APA lacks the teaching of exhausting gas via the first and second exhaust pipes simultaneously. More specifically, the APA does not teach or suggest exhausting the gas from the second exhaust pipe and continuing to exhaust the gas from the first exhaust pipe so as to greatly increase exhaust of the gas in the closed container and increase bubbling of the adhesive as recited in independent claim 1, enhancing bubbling of the adhesive in the transmission line by exhausting the gas from the closed container via the second exhaust line and continuing to exhaust the gas from the closed container via the first exhaust line as recited in independent claim 13, and enhancing bubbling of the adhesive in the transmission line by exhausting the gas from the closed container via the second exhaust line and continuing to pump the gas from the closed container via the first exhaust line as recited in independent claim 21.

The Examiner alleges, however, that this is not a patentable variation over the APA, particularly since in switching both pipes from open to close and vice versa there may be a delay for a fraction of a second in which both pipes are open at the same time. The claims broadly read on this scenario.

Applicant respectfully notes that the scenario presented by the Examiner is based completely on conjecture and speculation. A person of skill in the art is able to cease exhausting gas from the first exhaust pipe and cause the gas to be exhausted from the second exhaust pipe. It does not require extraordinary skill. The APA clearly states that in step 240, the gas is exhausted from the second exhaust pipe 150 and ceases to be exhausted from the first exhaust pipe 140. There is no suggestion that both pipes are open at the same time for any length of time whatsoever. The Examiner's allegation that there may be a delay for a fraction of a second is

unavailing because it has no basis in the APA. Obviousness cannot be based on mere possibilities with no suggestion in the prior art.

With respect to dependent claims 4 and 20 which recite that the operation time of exhausting from both pipes is about five seconds, the Examiner alleges that it would have been obvious to an engineer having ordinary skill in the art to have determined that exhausting via both pipes simultaneously would have increased exhaust and therefore increased bubbling of the adhesive since opening of both pipes would have increased the amount of exhaust from the system over the use of just one exhaust pipe alone.

Applicant respectfully submits that the Examiner's statement benefits from the exercise of hindsight in view of the present disclosure, and is based on conjecture and speculation. The APA is utterly devoid of any teaching or suggestion of the recited operation time or the benefits of increased extraction of water molecules absorbed by layers on the wafer caused by the exhausting of gas through both exhaust pipes in conjunction with a decrease in barometric pressure to cause bubbling of the adhesive.

During a typical semiconductor fabrication process flow, water molecules may be adsorbed onto the surface of the SiO₂ layer from the ambient environment or other sources. These water molecules can adversely affect the adhesion between the SiO₂ layer and the adhesive layer overlying the SiO₂ layer by providing unwanted moisture and affecting the bonding between the two layers. As a result, reducing the amount of water molecules present on the SiO₂ layer is desirable for optimum process results.

Within step 230 of the APA, the gas is exhausted only from the exhaust pipe coupled with the pump. It is commonly known that vacuum pumps used for semiconductor applications such as those coupled with exhaust pipe 140 do not pump liquids well in relation to their capacity for pumping gases. For example, the Merriam Webster Online Dictionary defines a vacuum pump as " a pump for exhausting gas from an enclosed space." See <http://www.merriam-webster.com/dictionary/vacuum+pump>. The capability of the vacuum pump to pump liquids is greatly diminished in comparison to its capability for pumping gases.

By pumping through both of the exhaust pipes at the same time within step 335, paragraph [0017] of the application teaches that:

The volume of gas inside the closed container 110 decreases, and barometric pressure becomes much lower, increasing bubbling in the adhesive. On the other hand, by step 335, the extraction of H_2O molecules adsorbed by the SiO_2 layer of the wafer may also occur. Both of these two points that can be achieved in step 335 will improve the adhesion of the adhesive to the SiO_2 layer. ([¶0017]; Emphasis added)

The processes described within the APA does not achieve these advantages. For example, within process 230, the gas is only exhausted from the first exhaust pipe and a significant barometric pressure drop is not achieved. In addition, within process 240, the gas is exhausted from only the second exhaust pipe, which does not decrease the barometric pressure within the chamber and increase bubbling within the adhesive. Thus, the prior art does not teach or suggest exhausting gas via both pipes to cause the extraction of water molecules in conjunction with a decrease in barometric pressure which increases bubbling within the adhesive.

For at least the foregoing reasons, Applicant respectfully asserts that independent claims 1, 13, and 21, and dependent claims 2-12, 14-20, and 22-23, are patentable over the APA.

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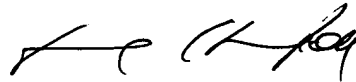
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CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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Attachments

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